

REMARKS

This Amendment is submitted preliminarily to the issuance of an Office Action in the above identified application.

With the present Amendment applicants have amended the specification to more clearly define the present invention.

The original claims have been canceled and replaced with a new set of claims including claims 12 and 14, the broadest apparatus and method claims, and the other claims which depend on them.

Consideration and allowance of present application is most respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place this case in condition for final allowance, then it is respectfully requested that such amendments or corrections be carried out by Examiner's Amendment, and the case be passed to issue. Any costs involved should be charged to the deposit account of the

undersigned (No. 19-4675). Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, he is invited to telephone the undersigned (at 631-549-4700).

Respectfully submitted,


Michael J. Striker
Attorney for Applicants
Reg. No. 27233

In the specification:

On page 1, line 3, please provide the following heading:

-- BACKGROUND OF THE INVENTION --

A1

On page 1, cancel first three paragraphs and substitute
therefore the following:

The present invention relates to an exposure apparatus comprising a lamp and a condenser device, in particular for wavelength-dependent light outcoupling, whereby a first, wavelength-dependent mirror layer is located within the exposure beam path to divide the beam path into a first, UV portion for exposure, and into a second, primarily visible and/or IR spectral portion, whereby a second mirror is located in the beam path of the second spectral portion that reflects the second spectral portion back to the first mirror layer.

A2

Such an exposure apparatus for photocopiers is made known in US 4,095,881. The light from a halogen lamp strikes a curved reflector, from which point a parallel bundle of rays is partially reflected by an

interference filter located in front of the lamp in the beam path, and its IR portion is allowed to pass through. The IR portion is reflected back into the lamp via a mirror, in order to warm it up and thereby save electrical energy to operate the lamp.

A2
end

An exposure method is made known in JP-A-3022518 in which a wavelength selective mirror layer that divides the beam path into a spectral portion used for exposure and into a further spectral portion is penetrated by radiation within the exposure beam path of a lamp. Under normal circumstances, the further spectral portion is focussed on the end of a bundle of light guides that is connected to a device for controlling the correct focussing. The disadvantage of this method is the fact that the entire spectral portion not used for exposure causes the instrument parts radiated by it to heat up considerably. This can lead to the maladjustment or even destruction of the instrument parts.

Cancel the paragraph bridging pages 1 and 2 and substitute therefore:

This object is attained by means of the invention by the fact that a viewing screen is located in the beam path of the light portion of the

A3

*A3
final*

second spectral portion reflected on the first mirror layer before the second pass through this first mirror layer, and by the fact that imaging optics are located between the viewing screen and the first mirror layer to image the lamp on the viewing screen.

Amend the last paragraph on page 2 as follows:

The first visible and IR spectral portion which is not used for exposure and passes through the first, preferably wavelength-dependent mirror layer is reflected on the second mirror located, in particular, perpendicular to the propagation of the unused spectral portion, back in the direction of the first mirror layer. Exactly like the first pass, this second passage through the first, preferably wavelength-dependent mirror layer is not complete, either, because residual reflection remains. A portion, $A=T^*(1-T)$, is reflected on the mirror layer and diverted in a direction away from the object to a viewing screen, on which an image of the lamp is then created by means of imaging optics. This image is used to adjust the lamp. This allows for a much more effective positioning of the lamp than could be achieved using an unadjusted installation, due to the mechanical tolerances of lamps. The result is a much more accurate illumination of the object to be

illuminated. Appropriate reference marks can be applied on the viewing screen to simplify the adjustment process.

Cancel the second paragraph on page 3 and substitute therefore:

An image of the lamp, the lamp filament, or the lamp electrodes is created on the viewing screen. The exposure apparatus can now be adjusted effectively using this image. The viewing screen preferably comprises a ground-glass screen, on which a mirror-inverted image of the lamp is projected. This simple exemplary embodiment of the viewing screen is cost-effective to manufacture and relates the position of the light source as an image with sufficient accuracy.

Amend the last paragraph on page 3 as follows:

[According to a particularly advantageous exemplary embodiment of the invention, imaging] Imaging optics for imaging the lamp on the viewing screen are located between the viewing screen and the first, preferably wavelength-dependent mirror layer so that an image of the lamp can be displayed on the viewing screen. These imaging optics comprise a

lens system, for example. The advantage of a lens system is the high light intensity and good accuracy. By arranging the lenses appropriately, it is possible to create an enlarged representation of the lamp, which is conducive to a rapid and simplified adjustment of the exposure apparatus. A simple aperture plate can be used in order to reduce assembly. According to the principle of a "hidden camera", this produces a mirror-inverted image of the lamp on the viewing screen, which is designed as a ground-glass screen, for instance.

Cancel the paragraph bridging pages 4 and 5 and cancel the next three full paragraphs on page 5 and substitute therefore:

The object of the method is attained using an exposure method for wavelength dependent light outcoupling according to the invention, in which at least a first, wavelength-dependent mirror layer is penetrated by radiation within an exposure beam path of a lamp to divide the beam path into a first spectral portion used for exposure, and into a second spectral portion, wherein at least one part of the second spectral portion is used to adjust the lamp, wherein the second spectral portion is reflected on a second mirror back in the direction toward the first mirror layer, and wherein the light

portion reflected in the second pass through the first mirror layer is imaged on the viewing screen.

A particularly advantageous aspect of the method is the fact that the lamp can be easily adjusted by means of the image created, and the largest share of the visible light and, mainly, the IR radiation can be kept away from the adjusting device. The largest share of the second spectral portion passes through the mirror layer in the second pass through the preferably wavelength-dependent mirror layer in the direction of the lamp, where the energy is advantageously absorbed by cooling elements already in place. No further cooling elements are necessary, therefore, which allows for a more compact and cost-effective design.

Amend the paragraph bridging pages 5 and 6 as follows:

The method according to the invention is carried out particularly advantageously, [in that] by the fact that the light emitted by a lamp is bundled with the aid of a condensor and, by means of a first, semipermeable, preferably wavelength-dependent mirror layer, is divided into a spectral portion used for exposure and into a second spectral portion, whereby the second spectral portion penetrates the mirror layer and is

reflected back by a second mirror in the direction toward the first mirror layer and is partially diverted on the mirror layer in the direction toward the viewing screen, and an image of the lamp is created on the viewing screen. This image can be used to adjust the lamp. This advantageous exemplary embodiment of the method allows for a very compact design of the device.

On page 6 in line 9, please provide the following heading:

-- BRIEF DESCRIPTION OF THE DRAWINGS --.

On page 6, line 15, provide the following heading:

-- DESCRIPTION OF THE PREFERRED EMBODIMENTS --.

Cancel page 9 in its entirety.

Amended specification:

Amended last paragraph on page 2:

The first visible and IR spectral portion which is not used for exposure and passes through the first, preferably wavelength-dependent mirror layer is reflected on the second mirror located, in particular, perpendicular to the propagation of the unused spectral portion, back in the direction of the first mirror layer. Exactly like the first pass, this second passage through the first, preferably wavelength-dependent mirror layer is not complete, either, because residual reflection remains. A portion, $A=T^*(1-T)$, is reflected on the mirror layer and diverted in a direction away from the object to a viewing screen, on which an image of the lamp is then created by means of imaging optics. This image is used to adjust the lamp. This allows for a much more effective positioning of the lamp than could be achieved using an unadjusted installation, due to the mechanical tolerances of lamps. The result is a much more accurate illumination of the object to be illuminated. Appropriate reference marks can be applied on the viewing screen to simplify the adjustment process.

Amended last paragraph on page 3:

Imaging optics for imaging the lamp on the viewing screen are located between the viewing screen and the first, preferably wavelength-dependent mirror layer so that an image of the lamp can be displayed on the viewing screen. These imaging optics comprise a lens system, for example. The advantage of a lens system is the high light intensity and good accuracy. By arranging the lenses appropriately, it is possible to create an enlarged representation of the lamp, which is conducive to a rapid and simplified adjustment of the exposure apparatus. A simple aperture plate can be used in order to reduce assembly. According to the principle of a "hidden camera", this produces a mirror-inverted image of the lamp on the viewing screen, which is designed as a ground-glass screen, for instance.

Amended paragraph bridging pages 5 and 6:

The method according to the invention is carried out particularly advantageously, by the fact that the light emitted by a lamp is bundled with the aid of a condensor and, by means of a first, semipermeable, preferably wavelength-dependent mirror layer, is divided into a spectral portion used for exposure and into a second spectral portion, whereby the second spectral portion penetrates the mirror layer and is reflected back by a second mirror in the direction toward the first mirror layer and is partially diverted on the

mirror layer in the direction toward the viewing screen, and an image of the lamp is created on the viewing screen. This image can be used to adjust the lamp. This advantageous exemplary embodiment of the method allows for a very compact design of the device.

CLAIMS

New claims:

12. An exposure apparatus, comprising a lamp; a condensor device for wavelength-dependent light outcoupling; a first wavelength-dependent mirror layer located within an exposure beam path of said lamp to divide the beam path into a first UV portion used for exposure, and into a second spectral portion selected from the group consisting of a visible portion, an IR spectral portion, and both; a second mirror located in the beam path of a second spectral portion that reflects the second spectral portion back to said first mirror layer; a viewing screen located in the beam path of a light portion of said second spectral portion before a second pass through said first mirror layer; an imaging optics located between said viewing screen and said first mirror layer to image said lamp on said viewing screen.

13. A device as defined in claim 12, wherein said second mirror has a curved shape.

14. An exposure method for wavelength-dependent light outcoupling, comprising the steps of penetrating at least one first mirror layer

by radiation within an exposure beam path of a lamp to divide the beam path into a first spectral portion used for exposure and into a second spectral portion; using at least one part of the second spectral portion to adjust the lamp; reflecting the second spectral portion on a second mirror back in direction toward the first mirror layer; and imaging the light portion reflected in a second pass through the first mirror layer, on a viewing screen.

15. An exposure method as defined in claim 14; and further comprising absorbing a largest share of the second spectral portion in cooling elements in a lamp housing.

16. An exposure method as defined in claim 14; and further comprising absorbing a largest share of the second spectral portion on cooling elements in a lamp housing.

17. An exposure method as defined in claim 14; and further comprising bundling a light emitted by the lamp with a condensor; and dividing the bundled light into the first spectral portion used for exposure and into the second spectral portion by the first mirror layer which is wavelength-dependent, so that the second spectral portion penetrates the mirror layer, and reflected by the second mirror back in direction toward the first mirror

layer, and is partially diverted on the mirror layer in direction toward the viewing screen, so that an image of the lamp is produced.